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covery is interesting, since it is the only record of a peptase occurring in plants unassociated with ereptase. The enzyme is present as such, not in the form of zymogen. The leaves of *Drosera* were found to be capable of absorbing dissolved peptones from liquids placed on their surfaces in a few hours.—CHARLES A. SHULL.

Hepaticae in Scotland.—MACVICAR[26] has published a full account of the liverworts of Scotland, stating that "this work may be regarded as a new departure for Scotland in this branch of botany," previous publications having been fragmentary. An ecological discussion of nearly 50 pages precedes the list, the latter including a full list of stations under each species. Among other interesting facts of distribution, the altitudes to which species ascend may be mentioned. Of the 225 species included in the list, 20 ascend above 4000 ft., 61 reach 3000–4000 ft., and 32 reach 2000–3000 ft.; which means that half of the Scottish species ascend above 2000 ft. There are 67 genera recognized in the list, those including 10 or more species being *Lophozia* (26), *Scappania* (20), *Marsupella* (13), and *Cephalozia* (10).—J. M. C.

A cretaceous Pityoxylon with ray tracheids.—It has been supposed that the occurrence of ray tracheids in the pinelike conifers is more recent than the Cretaceous, so that their discovery by BAILEY[27] in a *Pityoxylon* from the Upper Cretaceous of New Jersey is one of considerable interest. The species represents a structure intermediate between the older cretaceous pines and the most primitive of living pines; and the infrequent occurrence of ray tracheids in the older portions of the stems and their entire absence from the younger wood are taken to indicate that these structures are of recent origin and are not strongly fixed upon the plant. This shifts the development of ray tracheids from the Tertiary to the Upper Cretaceous.—J. M. C.

Longevity of seeds.—Miss REES[28] has made a study of the relation existing between the structure and permeability of the coats and the longevity of seeds. In general, the macrobiotic seeds (retaining vitality for more than 15 years) belong to the legumes and have highly cutinized coats. *Eucalyptus calophylla* and *E. diversicolor* are exceptions. They possess no impervious covering, and, contrary to the general situation for macrobiotic seeds, they are large and very rich in oils.—WILLIAM CROCKER.

Laboratory air.—NELJUBOW[29] has studied the growth of the pea seedling in laboratory air and comes to the following conclusions: Ethylene is the effective impurity of the laboratory air. Acetylene in sufficient concentration has the same effect. In these impurities the seedling loses its negative geotropism and becomes transversely geotropic or diageotropic. All his conclusions, with much more data for substantiation than NELJUBOW has, were reported by KNIGHT and his co-workers at the Boston meeting of the A.A.A.S. in 1910. Extracts of this report appear in *Science*[30] and in the *Experiment Station Record*.[31]—WILLIAM CROCKER.

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[26] MACVICAR, SYMERS M., The distribution of Hepaticae in Scotland. Trans. and Proc. Bot. Soc. Edinburgh **25**:vi+336. 1910.

[27] BAILEY, I. W., A cretaceous *Pityoxylon* with marginal tracheids. Ann. Botany **25**:315–325. *pl. 26.* 1911.

[28] REES, BERTHA, Longevity of seeds and structure and nature of the seed coat. Proc. Roy. Soc. Victoria N.S. **23**:393–414. 1911.

[29] NELJUBOW, D., Geotropism in der Laboratoriumsluft. Ber. Deutsch. Bot. Gesells. **29**:97–112. 1911.

Height of the Douglas fir.—Inquiring into the cause of the great height of the Douglas fir, FRYE[32] finds that unusual size is a characteristic of many of its neighbors, and cites as an example the common brake, which in this region attains a height of 14 feet. This among other things leads to the supposition that the cause of such giants of vegetation is to be sought in the climate, and hence to the conclusion that the fir is tall because it grows in a damp climate and in conditions of partial darkness due to overcrowding and to the large number of dark days during its elongating season.—GEO. D. FULLER.

The chromosomes of Ginkgo.—Conflicting accounts by CARDIFF, CAROTHERS, and SPRECHER regarding the number of chromosomes in *Ginkgo biloba* led ISHIKAWA[33] to examine the readily accessible Japanese material. He found 12 bivalent chromosomes in the pollen mother cell, the number reported by CARDIFF. One of the 12 is constantly larger than the other 11, a fact recorded in the figure but not in the text of both CARDIFF and CAROTHERS. While the paper is short, the evidence that 12 is the gametophytic number of chromosomes in *Ginkgo* is conclusive.—CHARLES J. CHAMBERLAIN.

The embryo sac of Pandanus.—From material of *Pandanus coronatus* collected in Java, CAMPBELL[34] finds that the embryo sac has a nearly normal egg apparatus, an endosperm nucleus formed by the fusion of two or more nuclei, and a considerable mass of antipodals, resembling the antipodal situation in *Sparganium*, except that in *Sparganium* most of the antipodals are formed after fertilization. CAMPBELL had already noted as many as 14 nuclei in the embryo sac of *Pandanus* before fertilization.—CHARLES J. CHAMBERLAIN.

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[30] KNIGHT, LEE I., ROSE, R. CATLIN, and CROCKER, WILLIAM, Effect of various gases and vapors upon etiolated seedlings of the sweet pea; a new method of detecting traces of illuminating gas. Science N.S. **31**:635, 636. 1910.

[31] Exp. Sta. Rec. **23**: 229, 230. 1910.

[32] FRYE, T. C., Height and dominance of the Douglas fir. Forestry Quart. **8**: 468–470. 1910.

[33] ISHIKAWA, M., Ueber die Zahl der Chromosomen von *Ginkgo biloba* L. Bot. Mag. Tokyo **24**:225, 226. *figs. 3.* 1910.

[34] CAMPBELL, D. H., The embryo sac of *Pandanus coronatus*. Bull. Torr. Bot. Club **38**:293–295. 1910.